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EXAMINER	
ROSARIO, DENNIS	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/902,227	HERSCH ET AL.	
	Examiner	Art Unit	
	Dennis Rosario	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment was received on May 18, 2005 and forwarded to the examiner on February 21, 2006 for the reasons indicated on the Examiner Initiated Interview Summary, filed 2/16/2006 in application number 09/998,229. Claims 1,3-10,12-45 are pending.

Response to Arguments

2. Applicant's arguments, see amendment, page 2, 4th paragraph with respect to claim 5, filed 5/18/2005, with respect to the rejection(s) of claim(s) 1,14 and 20 under 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Drinkwater et al. (US Patent 5,712,731 A) and Miller (cited ACM article) and Terasawa et al. (cited IEEE article).

Specification

3. Due to the amendment the objection to the specification is withdrawn.

Claim Objections

4. Due to the amendment the objection to claims 1,14,20,24,31,34,36,39 and 41 are withdrawn.

Claim Objections

5. The following quotations of 37 CFR § 1.75(a) is the basis of objection:

> (a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

6. Claims 21 and 37 are objected to under 37 CFR § 1.75(a) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

Regarding clam 21, line 1: "a mask" ought to be amended to "mask".

Regarding claim 37, line 1: "transmitted" has no antecedent basis and ought to be amended to " received" to correspond to claim 36, line 6: "receives".

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

> **Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.**

8. Claim 39-43 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows:

Claims 39-43 define a "signal" with functional descriptive material. While functional descriptive material may be claimed as a statutory product (i.e., a "manufacture") when embodied on a tangible computer readable medium, a "signal" per se does not fall within any of the four statutory classes of 35 U.S.C. §101. A "signal" is not a process because it is not a series of steps per se. Furthermore, a "signal" is not a "machine", "composition of matter" or a "manufacture" because these statutory classes "relate to structural entities and can be grouped as 'product' claims in order to contrast them with process claims." (1 D. Chisum, Patents § 1.02 (1994)). Machines, manufactures and compositions of matter are embodied by physical structures or material, whereas a "signal" has neither a physical structure nor a tangible material. That is, a "signal" is not a "machine" because it has no physical structure, and does not perform any useful, concrete and tangible result. Likewise, a "signal" is not a "composition of matter" because it is not "matter", but rather a form of energy. Finally, a "signal" is not a "manufacture" because all traditional definitions of a "manufacture" have required some form of physical structure, which a claimed signal does not have.

> A "manufacture" is defined as "the production of articles for use from raw materials or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." Diamond v. Chakrabarty, 447 U.S. 303, 308, 206 USPQ 193, 196-97 (1980) (quoting American Fruit Growers, Inc. v. Brogdex Co., 283 U.S. 1, 11, 8 USPQ 131, 133 (1931).

Therefore, a "signal" is considered non-statutory because it is a form of energy, in the absence of any physical structure or tangible material, that does not fall within any of the four statutory classes of 35 U.S.C. §101.

NOTE: Refer to Annex IV, section (c) of the USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility", Official Gazette notice of 22 November 2005 (currently at http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm).

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

10. Claims 5,6,8,9,12 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, line 4 has the phrase "animated dither matrix space" however the word "animated" has no antecedent basis since the point that the animated dither matrix space becomes animated is not clear. Does the point of rendering of a microstructure on the "Target image" of fig. 8 start upon the output of fig. 8, label: "Blending" then becomes animated upon the output of fig. 8, label: "Animated microstructure space" then gets rendered again upon the output of fig. 8, label: "Blending" only to be animated again upon the output of fig. 8, label: "Animated microstructure space"? Or is the microstructure of fig. 8, label: "Animated microstructure space" always being animated in fig. 8, label: "Animated microstructure space" regardless of being rendered in fig. 8, label: "Target image"? The examiner will attempt to reject claims 5 and 12 assuming that the first question is correct.

Claims 5,6,8,9 and 12 are rejected for the same reason as claim 5.

Regarding claim 16, line 2 has the phrase "selected basic colors in the target image"; however, the point at which the selected colors are in the target image is not clear. Does the rendering step render the selected basic colors so that the basic colors are in the target image?

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1,3,4,5,10,24,28,31,44 and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Drinkwater et al. (US Patent 5,712,731 A).

Regarding claim 1, Drinkwater discloses a method for creating a target image with an animated microstructure, where the target image is made of a succession of target image instances which differ from each other by an embedded microstructure which evolves over time, the method comprising the steps of:

a) defining an original image (fig. 1B, num. 1);

b) defining how the embedded microstructure (fig. 1B, num. 2) evolves over the succession of target image instances (as shown in fig. 3A,num. 7 to fig. 3B, num. 8); and

c) rendering (using "printing technology" in col. 7, line 10) from the original image the succession of target image instances comprising:

c1) said embedded microstructure evolving over time (as shown in fig. 2B, label "X" that corresponds to the letter "A" at the first position and label "Y" that changed from letter "A" to letter "B" upon the second position. Note, even though time is not mentioned, a person has to physically move from one position to the next, as shown in fig. 2B, where the moving includes time since a person can not be in two places simultaneously or the image has to be moved with respect to the person where the moving of the image takes time.),

c2) wherein the microstructure represents at least one visual motive element selected from the set of text (letter "A" as shown in fig. 2B), logo, symbol and ornament and

c3) where the target image instances are rendered by dithering (or "dot/half toned" in col. 11, line 55).

Regarding claim 3, Drinkwater et al. discloses the method of claim 1, where only a part (as shown in fig.3A,num. 7) of the original image is rendered with an animated microstructure, that part being specified during an additional mask definition step (using a "photomask" in col. 13, line 50).

Regarding claim 4, Drinkwater et al. disclose the method of claim 1, where an additional step enables to specify a set of basic colors (or "colours" in col. 1, line 23) for rendering said target image instances.

Regarding claim 5, Drinkwater et al. discloses the method of claim 4, where said target image instances are rendered at least one of the basic colors with a dither matrix embedding the microstructure and where the evolution of the embedded microstructure is defined by an animation transformation mapping between an animated dither matrix space and an original dither matrix space paved by the dither matrix.

Regarding claim 10, Drinkwater et al. discloses the method of claim 1, where the evolution of the microstructure over time comprises:

a) a blending (or "moiré interaction" in col. 7, line 59) between two microstructure shapes (or "multiple images" in col. 7, line 58).

Regarding claim 24, Drinkwater et al. discloses:

a) an image with an embedded microstructure evolving over time (when viewing the image at position "X" in fig. 2B, then at position "Y" in fig. 2B where each position corresponds to one time instance for each position),

a1) where from far away the image is visible (as shown in fig. 1B,num. 1) and from nearby (via a lens that magnifies of fig. 1C,num. 3) mainly the evolving microstructure is visible (as shown in fig. 1D,num. 3),

a2) where said image is displayed as a succession of image instances (as shown in fig. 2B,num. 5),

a21) each image instance differing from previous image instances by the microstructure evolution (as described above with respect to positions "X" and "Y") and

b) where the microstructure represents at least one visual motive elements selected from the set of text ("A" and "B" as shown in fig. 2B), logo, symbol and ornament.

Regarding claim 28, Drinkwater et al. discloses the image of claim 24, where the embedded microstructure is synthesized by a dithering method ("type of process for forming...the type of dot/half toned...areas" in col. 11, line 54-56) taking as input an original image (or "image array" in col. 11, line 47) and producing a dithered image (or "overlaminates" in col. 11, line 57), said dithering method being selected from the set of standard dithering ("dot/half toned" in col. 11, line 55 is interpreted as either a selection of dot toning or half toning method can be selected) and multicolor dithering methods.

Claim 31 is rejected the same as claim 24. Thus, argument similar to that presented above for claim 24 is equally applicable to claim 31.

Claim 44 is rejected the same as claim 1. Thus, argument similar to that presented above for claim 1 is equally applicable to claim 44 except for the additional limitation as disclosed in Drinkwater et al. of:

a) where said target image instances are rendered by converting original image intensities (as shown in fig. 6,num. 24) into an element selected from the set of microstructure surface coverages (as shown in fig. 6,num. 27 that covers a certain portion of fig. 6,num. 24) and microstructure colors.

Regarding claim 45, Drinkwater et al. discloses the method of claim 44, where the microstructure conveys publicity (or "public recogni-tion" in col. 5, lines 2,3).

13. Claims 14,15 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Miller (cited ACM article).

Regarding claim 14, Miller discloses a method for creating a target image with a microstructure evolving in successive image instances, comprising:

a) initialization and image rendering steps, where the initialization steps comprise:

a1) selecting color information (using a "colour map" on page 172, left column, section 6) necessary for rendering the target image;

a2) selecting a microstructure ("microstructure" on page 170, right column, section 4 for an "upper part [and] bottom" on page 171, right column, lines 7,8 portions);

a3) selecting of a time-dependent animation transformation (as shown by the equation on page 169, right column, section 3) allowing the microstructure to evolve over time;

a4) where the rendering steps comprise:

a41) an update of the current instance (as shown in fig. 2b with respect to fig. 2a) of the animation transformation when a new instance of the target image is to be rendered and further comprise:

a411) rendering of the new instance of the target image by dithering ("dither[ing]" on page 172,left column, section 6, 9th line from the bottom); and

a5) where the microstructure represents at least one visual motive element selected from the set of text, logo, symbol ("diamond" on page 171, right column, line 7) and ornament ("diamond" on page 171, right column, line 7).

Regarding claim 15, Miller discloses the method of claim 14, where the initialization steps also comprise:

a) selecting a mask ("colour map" on page 172, left column, section 6, lines 7,8) specifying regions ("underside...top" on page 172, left column, section 6, line 9) of the original image that are to be rendered with the selected microstructure.

Regarding claim 19, Miller discloses the method of claim 14, where the initialization steps also comprise:

a) the selection of a warping transformation (or "undulations [that cause] deforming" in page 171, right column, 5th paragraph starting with "image 2a").

14. Claims 44 and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Rice (US Patent 5,325,480 A).

Regarding claim 44, Rice discloses a method for creating a target image with an animated microstructure, where the target image is made of a succession of target image instances which differ from each other by an embedded microstructure which evolves over time, the method comprising the steps of:

a) defining an original image (fig. 3A,num. 38);

b) defining how the embedded microstructure evolves over the succession of target image instances (as shown in fig. 2);

c) rendering from the original image said succession of target image instances (as shown in fig. 3B) comprising:

c1) said embedded microstructure evolving over time (or "real-time" in col. 1, line 35);

c2) where the microstructure represents at least one visual motive element selected from the set of text (as shown in fig. 5A), logo, symbol and ornament and

c3) where said target image instances are rendered by converting (via a "blend" in col. 7, line 10 operation) original image intensities (or "surrounding map" in col. 7, line 11 that has a "predetermined color" in col. 4, line 31) into an element (or "graphical components" in col. 7, line 8) selected from the set of microstructure surface coverages (that are either "feathered" or "windowed" or "clamped" in col. 7, lines 9,10) and microstructure colors (that are "assigned different colors" in col. 4, lines 32,33).

Regarding claim 45, Rice discloses the method of claim 44, where the microstructure conveys publicity (as shown by the letter "A" in fig. 7B that can be read by a person.).

15. Claims 1,4,5-9,12 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Chatterjee (US Patent 7,012,616 B1).

Regarding claim 1, Chatterjee discloses a method for creating a target image with an animated microstructure, where the target image is made of a succession of target image instances which differ from each other by an embedded microstructure which evolves over time, the method comprising the steps of:

a) defining an original image (fig. 2, num. 202);

b) defining how the embedded microstructure ("pattern image" in col. 10, line 20) evolves over the succession of target image instances (using "anima-tion" in col. 9, lines 33,34); and

c) rendering (via fig. 1,num. 47) from the original image the succession of target image instances comprising:

c1) said embedded microstructure evolving over time (due to "frames" in col. 9, line 32 which each frame is displayed for a period if time),

c2) wherein the microstructure represents at least one visual motive element selected from the set of text, logo, symbol and ornament ("pattern image" in col. 10, line 27) and

c3) where the target image instances are rendered by dithering ("Dithering" in col. 10, line 13).

Regarding claim 4, Chatterjee discloses the method of claim 1, where an additional step enables to specify a set of basic colors (fig. 2,num. 206) for rendering said target image instances.

Regarding claim 5, Chatterjee discloses the method of claim 4, where said target image instances (due to "anima-tion" in col. 9, lines 33,34) are rendered by dithering ("Dithering" in col. 10, line 13) at least one of the basic colors (fig. 2,num. 206) with a dither matrix (or "mask" in col. 10, line 15) embedding (or "combin[ing]" in col. 10, line 21) the microstructure (or "pattern" in col. 10, line 19) and where the evolution of the embedded microstructure is defined by an animation transformation mapping (or "number of frames...in succession" in col. 9, line 32 used for animation; thus, the frames are arranged or mapped to display an animation) between an animated dither matrix space (or "frames" in col. 9, line 32 that were "displayed" in col. 9, line 33) and an original dither matrix space (any one of the frames of the succession) paved by the dither matrix ("mask" in col. 10, line 15).

Regarding claim 6, Chatterjee discloses the method of claim 5, where the embedded microstructure is made more flexible by an additional warping transformation mapping ("scaling" in col. 9, line 44 the successive frames where the frames are arranged or mapped for animation) between a target image space containing the target image (as shown in fig. 3, num. 302) and the animated matrix space (or any one of the frames that were displayed.).

Regarding claim 7, Chatterjee discloses the method of claim 4, where rendering of target image instances is carried out by multicolor dithering (or "Dithering" in col. 10, line 13 that uses "color" in col. 10, line 24) with the defined set of basic colors and with a dither matrix ("mask" in col. 10, line 18) embedding (or "combin[ing] in col. 10, line 21) the microstructure.

Claims 8 and 9 are rejected the same as claims 5 and 6. Thus, argument similar to that presented above for claims 5 and 6 is equally applicable to claims 8 and 9, respectively.

Claims 12 and 13 are rejected the same as claims 5 and 6. Thus, argument similar to that presented above for claims 5 and 6 is equally applicable to claims 12 and 13, respectively.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (cited ACM article) in view of Lie (US Patent 5,936,606 A).

Regarding claim 16 Miller does not teach the limitations of claim 16, but does teach a "colour map" on page 172, left column, section 6, lines 7,8 and provides a reference "[1]" for further details. Thus one of ordinary skill in the art will need a teaching of a colour map in order to achieve the goal of rendering.

Lie teaches a color map as shown in fig. 1,num. 22 that can be used with Miller's teaching and the remaining limitations of claim 16:

a) where a multi-valued mask (fig. 1,num. 22) expresses the weight (fig. 1,num. 23) of original image colors (fig. 1, label "Original data") and the weight (fig. 1,num. 23) of the selected basic colors (fig. 1, label "Input data") in the target image (fig. 1, label: Display data YUV).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Miller's teaching of a colour map with Lie's teaching of a color map, because Lie supplies a detailed teaching, which is missing in Miller, of a color map in order to achieve the goal in Miller of rendering.

18. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (cited ACM article) in view of Lie (US Patent 5,936,606 A) as applied to claim 16 above, and further in view of Hung (US Patent 5,296,923 A).

Regarding claim 17, Lie teaches the claimed conversion (fig. 1,num. 21) from original image colors (fig. 1, label: "Input data") to basic colors (fig. 1, label: Display data YUV).

Lie of the combination does not teach the remaining limitations of claim 17; however, Lie of the combination does teach converting colors as shown in fig. 1,num. 21, but lacks any detailed teaching of how to convert colors. Thus, one of ordinary skill in the art will need a teaching that performs color conversion in order to obtain the output of fig. 1, label: Display data YUV.

Hung teaches a conversion of colors as shown in fig. 10 and the remaining limitations of claim 17 of:

a) where color information is expressed as a set of basic colors (represented as XYZ in fig. 7),

b) where the initialization steps also comprise:

b1) a tetrahedrization (as shown in fig. 7 on the left side) of the color space according to said set of basic colors (via an arrow between the two tetrahedrons), and

c) where the rendering steps comprise

c1) a conversion from original image colors (fig. 7, label: "RGB") to basic colors (fig. 7, label "XYZ") making use of said tetrahedrization.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Lie's color conversion with Hung's teaching, because Hung supplies a detailed teaching of color conversion that is missing in Lie's fig. 1,num. 21 in order to obtain the goal of Lie of obtaining the output of fig. 1, label: Display data YUV.

19. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (cited ACM article) in view of Lie (US Patent 5,936,606 A) and Hung (US Patent 5,296,923 A) as applied to claim 17 above, and further in view of Ostromoukhov et al. (cited in the IDS).

Regarding claim 18 Lie of the combination teaches the claimed conversion (fig. 1,num. 21) from original image colors (fig. 1, label: "Input data") to basic colors (fig. 1, label: Display data YUV).

Lie of the combination does not teach the remaining limitations of claim 18; however, Lie of the combination does teach converting colors as shown in fig. 1,num. 21, but lacks any detailed teaching of how to convert colors. Thus, one of ordinary skill in the art will need a teaching that performs color conversion in order to obtain the output of fig. 1, label: Display data YUV.

Ostromoukhov et al. teaches color conversion as shown in fig. 1 and the remaining limitations of claim 18:

a) locating a tetrahedron enclosing original image color C_r (as shown in fig. 2a);

b) by expressing C_r as a barycentric combination of four basic colors located at the tetrahedron's vertices (or "barycentric combination of 4 colors" in page 426,right column, 4^{th} line); and

c) by applying multicolor dithering (as shown in fig. 2b) to select from the four basic colors the color to be applied at a current target image location.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Lie's color conversion with Ostromoukhov et al.'s teaching, because Ostromoukhov et al supplies a detailed teaching of color conversion that is missing in Lie's fig. 1,num. 21 in order to obtain the goal of Lie of obtaining the output of fig. 1, label: Display data YUV.

20. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatterjee (US Patent 7,012,616 B1) in view of Ostromoukhov et al. (US Patent 5,422,742 A).

Regarding claim 20, Chatterjee teaches a method for creating a target image with an embedded microstructure evolving in successive image instances comprising the steps of:

a) defining an original image (fig. 2,num. 202), an original microstructure ("pattern image" in col. 10, line 19), color information (fig. 2, label: "IMAGE WITH PIXELS HAVING COLOR VALUES) used for rendering the target image (fig. 3,num. 312) and animation ("anima-tion" in col. 9, lines 33,34);

b) traversing a target image (x,y) (fig. 3,num. 308 or "mask" in col. 10, line 29) pixel by pixel and row by row, determining corresponding (or "corresponding pixel of the image itself" in col. 10, line 30) positions (using the rows and columns of fig. 2,num. 202) in the original image (x',y') and, according to the animation (since fig. 3,num. 308 is used for animation), corresponding (or "corresponding pixel of the pattern image" in col. 10, lines 30,31) positions (using the rows and columns of fig. 2, num. 202) in the original microstructure (x'',y'');

c) obtaining from the original image position (x',y') the color C_r (fig. 2,num. 206) to be reproduced and from the original microstructure position (x'',y'') rendering information (for "anima-tion" in col. 9, lines 33,34);

d) rendering the target image (as shown in fig. 3,num. 302) by making use of the rendering information;

e) where the microstructure represents at least one visual motive element selected from the set of text, logo, symbol and ornament (or "pattern" in col. 10, line 27): and

f) where said image instances are rendered by dithering ("Dithering" in col. 10, line 13).

Chatterjee does not teach the claimed "time-dependent animation transformation", but does teach that dithering is "known within the art" in col. 10, line 17; thus, Chatterjee suggests that there are other teachings of dithering that can be used with the invention.

Ostromoukhov et al. teaches a dithering as suggested in Chatterjee and the claimed time-dependent animation transformation (as shown in fig. 9, num. 90 that rotates tiles to obtain "ROTATED DITHER TILES" thus the action of rotating takes time in order to obtain rotated dither tiles; thus, the rotated dither tiles are interpreted as a time0dependent animation transformation.).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Chatterjee's teaching of dithering with Ostromoukhov et al.'s teaching of dithering, because Ostromoukhov et al.'s dithering "minimize[es] Moire patterns" in col. 3, line 68 to col. 4, line 1.

Regarding claim 21, Chatterjee of the combination teaches the method of claim 20, where an additional a mask (fig. 3,num. 308) is defined whose value define which parts (fig. 3,num. 308) of the original image (fig. 1,num. 300) are rendered with an embedded microstructure (or "pattern image" in col. 10, line 27).

Regarding claim 22, Chatterjee of the combination teaches the method of claim 21, where the mask values specify microstructure appearance properties such as visibility, position and spatial extension (or "blending" in col. 10, line 17).

Regarding claim 23, Chatterjee of the combination teaches the method of claim 20, where the embedded microstructure is made more flexible by defining an additional warping transformation (or "stretched" in the abstract).

21. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (cited ACM article) in view of Terasawa et al. (cited IEEE article).

Regarding claim 24, Miller discloses:

a) an image with an embedded microstructure ("microstructure" on page 170, right column, section 4) evolving over time (as shown in figures 2a-2d) ,

a1) where said image is displayed as a succession of image instances (as shown in figures 2a-2d),

a12) each image instance differing from previous image instances by the microstructure evolution (as shown in fig. 2 on page 171) and

b) where the microstructure represents at least one visual motive elements selected from the set of text, logo, symbol ("diamond shaped" on page 171, right column, line 7) and ornament ("diamond shaped" on page 171, right column, line 7 and shown in fig. 5).

Miller does not teach the additional limitation of where from far away mainly the image is visible and from nearby mainly the evolving microstructure is visible. But does teach "the microstructure of a surface affects its macroscopic optical properties" on page 170, right column, section 4. However, Miller et al. does not provide enough details about how the microstructure of a surface affects its macroscopic optical properties and provides another teaching in page 172, left column, 5th line from the bottom that provides more details. Thus, Miller suggests to one of ordinary skill in the art to find a teaching about how the microstructure of a surface affects its macroscopic optical properties.

Terasawa et al. discloses a method about how the microstructure of a surface affects its macroscopic optical properties as shown in fig. 1 and the remaining limitations of claim 24 of:

a) where from far away (as shown by position "v" in fig. 2) mainly the image is visible (represented as a "surface" with two hairs , labeled "n" and "Bright part) and from nearby (at any position along "t_v" of fig. 2) mainly the evolving microstructure (as shown by a single hair, labeled "Bright part" of fig. 2) is visible.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Miller's teaching of microstructure with Terasawa et al.'s teaching of microstructure, because Terasawa et al.'s teaching of microstructure supplies a detailed teaching , which is missing in Miller, of microstructure with respect to optical properties.

22. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Drinkwater et al. (US Patent 5,712,731 A) in view of McGrew (US Patent 6,535,638 B2).

Regarding claim 34, Drinkwater et al. teaches all the limitations of claim 34 as discussed in claim 24, above, except for the additional limitation of said computing system. However, Drinkwater et al. teaches that computers can be used to create "diffraction patterns" in col. 5, line 9, but is deficient in such a teaching. Thus, one of ordinary skill in the art will need a teaching about a computer that generates diffraction patterns.

McGrew teaches a computer that generates diffraction patterns as shown in fig. 6 a portion of which is shown in detail in fig. 3. and the additional limitation of claim 34 of:

a) said computing system (as shown in fig. 6) comprising a server computing system (as shown in fig. 8,num. 700), where the image is stored ("in a database" in col. 9, line 55) as a sequence of image instances (or "random data" in col. 9, line 52 corresponds to "labels" in col. 9, line 52 where each label has a type of hologram as mentioned in col. 9, line 21) and comprising:

a1) a client computing system (fig. 8,num. 710) capable of:

a11) receiving the sequence of image instances from the server computing system (via the arrows between numerals 700,710 and 705)); and

a12) displaying said sequence (using a printer as indicated in fig. 8,num. 710).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Drinkwater et al.'s teaching of generating diffraction patterns using a computer with Mcgrew's teaching of Mcgrew's computing system of fig. 6, because Mcgreq's computing system of fig. 6 can be "integrated into a...anticounterfeit/security system" in col. 9, lines 40,41.

23. Claims 24- 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatterjee (US Patent 7,012,616 B1) in view of Knowlton (US Patent 4,398,890 A).

Regarding claim 34, Chatterjee teaches a computing system (fig. 1) capable of:

a) displaying an image (fig. 3, label: DIDPLAY) with an emdedded microstructure (Fig. 3,num. 312) evolving over time (because the image of fig. 3 is "animated" in col. 9, line 31),

a1) said microstructure representing at least one visual motive element selected from the set of text, logo, symbol and ornament ("pattern image" in col. 10, line 20 is interpreted as an ornament since an ornament is a decoration or pattern),

b) said computing system comprising:

b1) a server computing system (fig. 1,num. 49), where the image is stored (similarly to fig. 1,num. 22) as a sequence of image instances and comprising:

b11) a client computing system (fig. 1,num. 20) capable of:

b111) receiving the sequence of image instances from the server computing system (via fig. 1,num. 51) and

b112) displaying said sequence (fig. 1,num. 47).

Chatterjee does not teach the limitation of where from far away mainly the image is visible and from nearby mainly the evolving microstructure is visible, but does teach that a dithering pattern is known "by those of ordinary skill in the art" in col. 10, lines 19,20. However, Chatterjee does not provide or show any details about the dithering pattern; thus one of ordinary skill in the art will need a teaching that shows how to create a dithering pattern. In addition, Chatterjee teaches that "other pattern image[s]" can be "used" in col. 10, lines 27-29. Thus, Chatterjee suggests that in addition to a dither pattern created using a dither method, other patterns created using other methods can be used with the invention.

Knowlton teaches how to create patterns as shown in fig. 4B and the remaining limitation of claim 34 of:

a) where from far away mainly the image is visible and from nearby mainly the evolving microstructure is visible (as shown in fig. 5B).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Chatterjee's teaching of selecting a pattern method with Knowlton's teaching of a pattern, because Knowlton's patterns "produce[s] a meaningful macroscopic pictorial representation" in col. 1, line 31,32.

Regarding claim 35, Chatterjee of the combination teaches the computing system of claim 34, where the server computing system is a Web server (for the "Internet" in col. 5, line 19) and where the sequence of image instances is displayed by the client computing system within a Web page ("web sites" in col. 1, line 66).

Claim 24 is rejected the same as claim 34. Thus, argument similar to that presented above for claim 34 of a system is equally applicable to claim 24 of a product.

Claim 25 is rejected the same as claim 38,below. Thus, argument similar to that presented above for claim 38, below, is equally applicable to claim 25.

Regarding claim 26, Chatterjee of the combination teaches the image of claim 25, where the mask values evolving over time (due to "frames" in col. 9, line 32) yield apparent changes in at least one of the embedded microstructure appearance properties selected from the set of visibility (fig. 8,num. 806), position and spatial extension properties.

Claim 27 is rejected the same as claim 25. Thus, argument similar to that presented above for claim 25 is equally applicable to claim 27.

Claim 28 is rejected the same as claim 37. Thus, argument similar to that presented above for claim 37,below, is equally applicable to claim 28.

Claims 29 and 30 are rejected the same as claims 25 and 26. Thus, argument similar to that presented above for claims 25 and 26 is equally applicable to claims 29 and 30, respectively.

Claim 31 is rejected the same as claim 34. Thus, argument similar to that presented above for claim 34 is equally applicable to claim 31.

Claims 32 and 33 are rejected the same as claims 25 and 26. Thus, argument similar to that presented above for claim 25 and 26 is equally applicable to claims 32 and 33, respectively.

24. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatterjee (US Patent 7,012,616 B1) in view of Knowlton (US Patent 4,398,890 A) as applied to claim 34 above, and further in view of Bellomo et al. (US Patent 6,766,299 B1).

Claim 36 is rejected the same as claim 34. Thus, argument similar to that presented above for claim 34 is equally applicable to claim 36 except for the additional limitation taught in Chatterjee of:

a) microstructure data ("dithering pattern image" in col. 10, lines 18,19) and microstructure evolution parameters ("number of frames" in col. 9, line 32)

b) embedded (or "combined" in col. 10, line 21) microstructure.

Chatterjee does not teach the remaining limitation of where the client computing and display system receives from the server computing system.

However, Chatterjee teaches viewing images on "web sites" in col. 1, line 66 and provides a system as shown in fig. 1 that is used with the Internet and teaches "images... for...transmission purposes" in col. 6, line 19,20. However, Chatterjee does not provide any details of how to view or transmit images on web sites using fig. 1. Thus, Chatterjee suggest to one of ordinary skill in the art that the system of fig. 1 can be used to view and transmit images on web sites using the Internet.

Bellomo et al. teaches how to view images using the Internet as shown in fig. 7 as suggested by Chatterjee and the remaining limitations of:

where the client computing and display system (fig. 7,num 70) receives from the server computing system (fig. 7,num. 30) as input data an original color image (as shown in fig. 10a), and where the client computing and display system synthesizes and displays the target image on the fly (or "real-time" in col. 4, line 31).

Bellomo does not teach the claimed microstructure data and microstructure evolution parameters and embedded microstructure.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the combination using Chatterjee's microstructure data ("dithering pattern image" in col. 10, lines 18,19) and microstructure evolution parameters ("number of frames" in col. 9, line 32) and embedded (or "combined" in col. 10, line 21) microstructure for transmission purposes with Bellomo's teaching of viewing images using the Internet, because Bellomo supplies a detailed teaching that is missing in Chatterjee of viewing images using the Internet.

Regarding claim 37, Chatterjee of the combination teaches the computing system of claim 36, where the transmitted microstructure data comprises:

a) a dither matrix (or "mask" in col. 10, line 29)

b) where the microstructure evolution parameters comprise:

b1) an animation transformation (or "blending" in col. 10, line 21) and

c) where the target image is a dithered image generated by a method selected from the set of standard dithering (or "dithering...as known within the art" in col. 10, line 17) and multicolor dithering methods.

25. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chatterjee (US Patent 7,012,616 B1) in view of Knowlton (US Patent 4,398,890 A) as and further in view of Bellomo et al. (US Patent 6,766,299 B1) as applied to claim 36 above, and further in view of Bellomo et al. (US Patent 6,766,299 B1).

Regarding claim 38, Chatterjee of the combination teaches the computing system of claim 37, where the microstructure evolution parameters also comprise:

a) a warping transformation (fig. 4,num. 406) and

b) a mask (fig. 4,num. 404) whose values represent relative weights (or percentages as discussed in col. 10, lines 31-33) of the original color image and of the dithered image, the mask defining the position and visibility (as shown in fig. 8,num. 806) of the microstructure within the target image.

Chatterjee does not teach the remaining limitation of:

a) where the client computing and display system receives from the server computing system as input data a mask whose values represent relative weights of the original color image and of the dithered image, the mask defining the position and visibility of the microstructure within the target image.

However, Chatterjee teaches viewing images on "web sites" in col. 1, line 66 and provides a system as shown in fig. 1 that is used with the Internet and teaches "images... for...transmission purposes" in col. 6, line 19,20. However, Chatterjee does not provide any details of how to view or transmit images on web sites using fig. 1. Thus, Chatterjee suggest to one of ordinary skill in the art that the system of fig. 1 can be used to view and transmit images on web sites using the Internet.

Bellomo et al. teaches how to view images using the Internet as shown in fig. 7 as suggested by Chatterjee and the remaining limitations of:

a) where the client computing and display system receives from the server computing system (as shown in fig. 7).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Chatterjee's teaching of transmission of images and the mask of fig. 4,num. 404 with Bellmo et al.'s teaching of receiving images using a server for the same reasons as claim 36.

Conclusion

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Rosario whose telephone number is (571) 272-7397. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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